PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

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Peace/williston Fish and Wildlife Compensation Program Annual Report 1998/99

M. D. Wood and B. G. Blackman
September 1999

PWFWCP Report No. 205

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The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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Author(s): Mari D. Wood[1] and Brian G. Blackman[1]
Address(es): [1] Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave., 3rd Floor Prince George, B.C. V2L 3H9

PEACE/WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

ANNUAL REPORT 1998/99

STEERING COMMITTEE:

Colin Gurnsey (BC Hydro) - Chairman
Ted Down (BC Fisheries)
Ron Fernandas (BC Hydro)
John Metcalfe (BC Environment)

FISH TECHNICAL COMMITTEE:

Bob Westcott (BC Hydro) - Chairman
Nick Baccante (BC Environment)
Don Cadden (BC Environment)
Carol Lamont (BC Hydro)
Ken Ashley (BC Fisheries) - Technical Advisor

WILDLIFE TECHNICAL COMMITTEE

John Elliott (BC Environment) - Chairman
Ed Hill (BC Hydro)
Alan Chan-McLeod (BC Hydro)
Doug Heard (BC Environment)

FISH BIOLOGISTS:

Brian Blackman (BC Environ.) - Senior Biologist
Arne Langston (BC Hydro)
Randy Zemlak (BC Hydro)

WILDLIFE BIOLOGISTS:

Mari Wood (BC Hydro) - Senior Biologist
Fraser Corbould (BC Hydro)
Pamela Hengeveld (BC Hydro)

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PROGRAM ADMINISTRATION

Membership on the Steering Committee (SC) changed this year with John Metcalfe replacing Al Sanderson as the BC Environment (BCE) representative for the Omineca/Peace Region. Chairmanship was handed over to BC Hydro (BCH) member Colin Gurnsey from Ted Down (BCE). Membership on both the Fish (FTC) and Wildlife (WTC) Technical Committees remained the same as the previous fiscal; the Fish chair position remained with Bob Westcott (BCH) for a second term, while the Wildlife chair position rotated from Ed Hill (BCH) to John Elliott (BCE).

Fish biologists Brian Blackman and Arne Langston, and wildlife biologists Mari Wood and Fraser Corbould, continued as full-time staff responsible for administering, managing, and conducting fish and wildlife research and enhancement projects. Brian Blackman's position was transferred from BCE to BCH; all PWFWCP staff are now BCH employees. Randy Zemlak provided full-time technical support for the Fish Program. The fish technical specialist position was made permanent, and a job competition ensued. Randy Zemlak was the successful applicant and was awarded the permanent position with the PWFWCP. Pamela Hengeveld provided technical support to the Wildlife Program for an 8 month term between May and December 1998.

Administrative activities included preparation of the 1997/98 Annual Report (Wood and Blackman 1998), tracking program expenditures, managing contracts, preparing quarterly reports on program activities, preparing performance review plans, and updating staff safety training. Various consulting firms and contractors were employed to undertake work on a variety of projects.

PROGRAM PLANNING

Two in-person meetings and additional conference calls were held between Program Biologists and their respective Technical Committees to discuss the current year's projects and finances, and prepare a budget for 1999/00. The FTC and fish biologists, with the assistance of Harvey Andrusak (Redfish Consulting Ltd.), developed a draft Fish Strategic Plan and initiated development of an Operational Plan. A workshop was also held with Dr. John Stockner (Eco-Logic Ltd.) to develop a strategy for conducting limnological investigations of Williston Reservoir. Planning was initiated for an Arctic Grayling Workshop to be hosted by the PWFWCP in Prince George in January 2000. The purpose of the workshop is to discuss current Arctic grayling research and management with biologists from throughout western North America. The Fish Program funded a co-operative project with UBC to conduct genetic research on Arctic grayling (Task #99-11), and funding ($112,000) was received from Forest Renewal B.C. (FRBC) for the Table/Anzac Arctic grayling project (Task #99-21).

Wildlife project funding proposals were prepared and submitted to the Habitat Conservation Trust Fund (HCTF) and FRBC) for financial assistance with the Fisher Habitat Use, Ingenika Prescribed Burn, and Rocky Marsh Wetlands Enhancement Projects for 1999/00. Informal meetings were held with individuals, consultants, and stakeholder representatives to discuss current and potential future projects.

PUBLIC CONSULTATION

Program Staff

Program biologists manned the PWFWCP display booth at both the BC Wildlife Federation Annual Meeting in Fort St. John, and the Forest Expo Convention in Prince George. Two radio interviews highlighting Fish Program activities in the Mackenzie area were conducted (radio-station CKMK), and a presentation providing an overview of 98/99 fish projects was delivered to Fish Management students at UNBC. Information on various fish projects was provided to and published in newspapers in Chetwynd, Fort St. John, and Mackenzie, and in the Mackenzie Fish and Game Association newsletter. A student artwork contest was arranged as part of the "Kokanee in Classrooms" Project, and winning artwork was printed in local newspapers. An update article on the Fisher Project was submitted to Martes Group (a professional group dedicated to furbearer research and conservation) for inclusion in their newsletter. Information and photos were also supplied for BC Hydro Corporate Environment's Annual Report. The PWFWCP and specific fish and wildlife projects were discussed (through informal meetings and talks) with industry representatives, club members, guide-outfitters, trappers, contractors, students, and tourists. Detailed project information and technical reports were also discussed with and disseminated to consultants, biologists, and researchers throughout western North America.

Program biologists also contributed to PWFWCP public consultation activities handled by BC Hydro's Public Affairs department (see below), including drafting and editing project articles for *NatureLine* #10 (the PWFWCP's official newsletter), a newspaper supplement, a PWFWCP brochure, and a PWFWCP website. Biologists also provided input to the activities proposed in the Public Consultation Plan for 1999/00.

BC Hydro Public Affairs

A 4-page newspaper supplement profiling the PWFWCP was published in local newspapers at the end of the fiscal, and a web-site for the program was established. An article was published in the 1998/99 Freshwater Fishing Regulations Synopsis. Proposals to develop a multi-media video on the PWFWCP in 99/00 were solicited, and a survey of the public's perception of the PWFWCP was also conducted. A booth was manned at the annual Guide-Outfitters of B.C. (GOABC) convention in Victoria, BC. Completion of *NatureLine* #10 and the program brochure were deferred to 99/00.

FISH PROGRAM

Brian Blackman

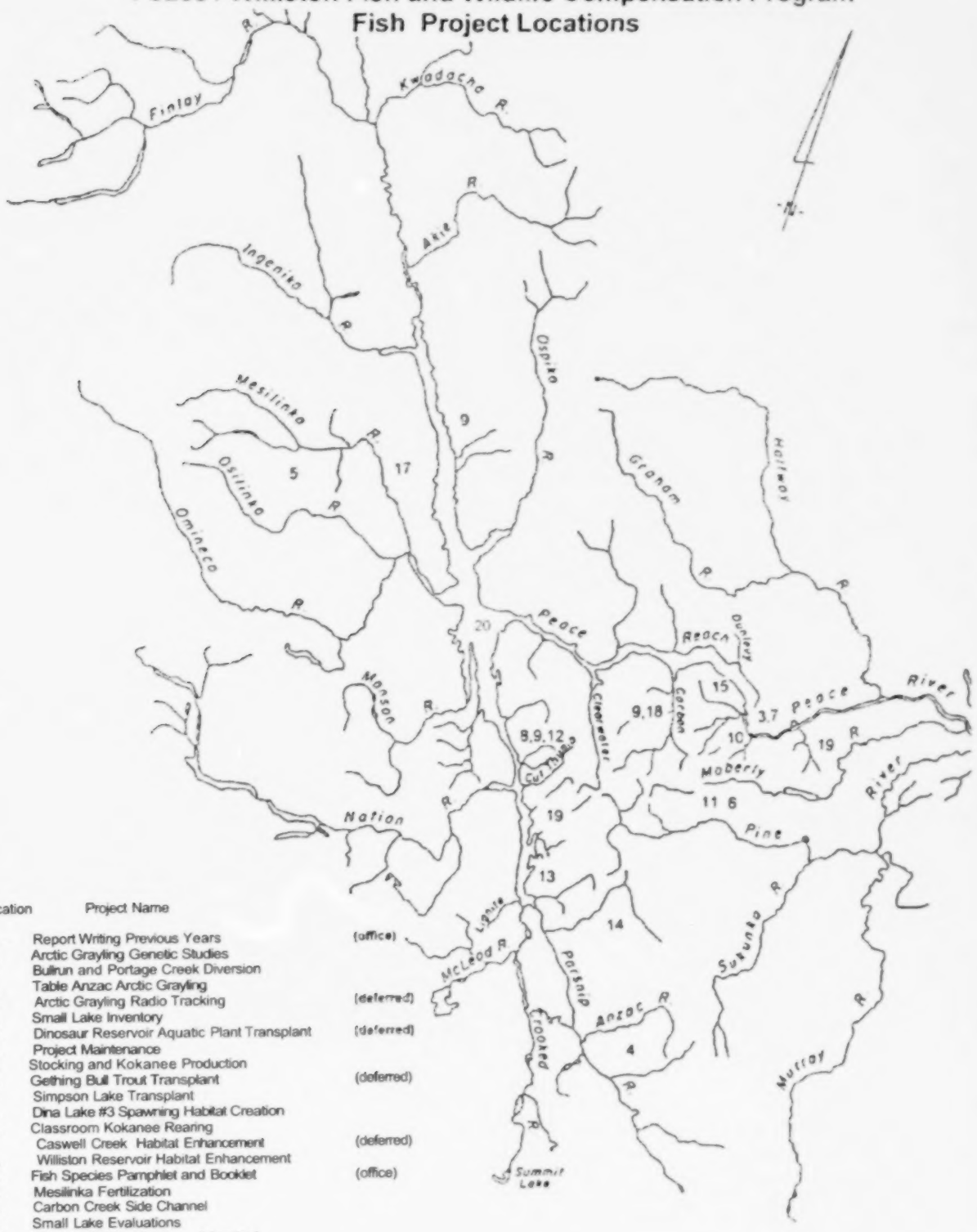
98/99 PROJECT LIST

MAP		PROJECT	LOCATION
	PLANNING		
	99-06	Strategic Plan Creation (Fish)	Office
20		Limnology	Reservoir
	INVENTORY / ASSESSMENT		
1	99-01	Report Writing (previous years reports)	Office
2	99-11	Grayling Genetics Study (UBC)	Watershed
3	99-12	Bullrun and Portage Creeks Diversion	Dinosaur Reservoir
4	99-21	Table / Anzac Arctic Grayling (FRBC)	Parsnip
5	99-22	Arctic Grayling Radio Tracking (deferred)	Finlay
6	99-16	Small Lake Inventory	Peace
7	99-24	Dinosaur Reservoir Aquatic Plant Transplant (UNBC)	Dinosaur Reservoir
	ENHANCEMENT / PROTECTION		
8	99-02	Project Maintenance (Public Involvement)	Parsnip
9	99-03	Stocking and Kokanee Production	Watershed
10	99-07	Gething Bull Trout Transplant	Dinosaur Reservoir
11	99-08	Simpson Lake Transplant (Public Involvement)	Peace
12	99-09	Dina Lake #3 Spawning Habitat Creation (Public Involvement)	Parsnip
13	99-10	Classroom Kokanee Rearing (DFO)	Parsnip/Peace
14	99-14	Caswell Creek Habitat Enhancement	Parsnip
15	99-15	Williston Reservoir Habitat Enhancement	Peace/Reservoir
16	99-19	Fish Species Pamphlet and Booklet	Watershed
17	99-20	Mesilinka River Fertilization (Min of Fisheries)	Finlay
	EVALUATION / MONITORING		
18	99-04	Carbon Creek Side Channel	Peace
19	99-17	Small Lake Evaluation	Parsnip

(co operative projects) with:

UBC	University of British Columbia-graduate student funded by PWFWCP
FRBC	Forest Renewal B.C. provided funds to PWFWCP
UNBC	University of Northern British Columbia project funded by PWFWCP
DFO	Department of Fisheries and Oceans joint project
Min of Fisheries	Ministry of Fisheries joint project funded by PWFWCP

Peace / Williston Fish and Wildlife Compensation Program
Fish Project Locations



Location	Project Name	
1.	Report Writing Previous Years	(office)
2.	Arctic Grayling Genetic Studies	
3.	Bullrun and Portage Creek Diversion	
4.	Table Anzac Arctic Grayling	
5.	Arctic Grayling Radio Tracking	(deferred)
6.	Small Lake Inventory	
7.	Dinosaur Reservoir Aquatic Plant Transplant	(deferred)
8.	Project Maintenance	
9.	Stocking and Kokanee Production	
10.	Gething Bull Trout Transplant	(deferred)
11.	Simpson Lake Transplant	
12.	Dina Lake #3 Spawning Habitat Creation	
13.	Classroom Kokanee Rearing	
14.	Caswell Creek Habitat Enhancement	(deferred)
15.	Williston Reservoir Habitat Enhancement	
16.	Fish Species Pamphlet and Booklet	(office)
17.	Mesilinka Fertilization	
18.	Carbon Creek Side Channel	
19.	Small Lake Evaluations	
20	Reservoir Limnology (planning)	

• this project encompasses the entire watershed

INVENTORY/ASSESSMENT PROJECTS

1. REPORT WRITING PREVIOUS YEARS (Task 99-01)

Objective: To provide staff time and funds to complete reports from previous years, that are at the first and second draft level, and to copy, bind, incorporate reports into the "Program technical series," and to distribute copies of the reports.

1998/99 (Year 2 of ongoing): . Reports completed were:

No. 139. Simpson Lake Rainbow trout transplant, 1994. A.R. Langston and R.J. Zemlak.

No. 172. Fish trapping operation on Dunlevy Creek, 1995. R.J. Zemlak. 17pp plus appendices.

No. 180. A summary report of the Table River surveys. 1996 status report. K. Mathias, A.R. Langston, and R.J. Zemlak. 62pp plus appendices.

No. 188. Fish habitat enhancement potential and current fish population assessment of Calais Lake, 1992. A.R. Langston and A.R. McLean. 13pp plus appendices.

There are still three reports that require completion. Less time was spent on this project than anticipated due to increased administrative workloads and other duties. Copies of all completed program reports have been made and placed in the PWFWCP library and copies have been distributed to the appropriate agencies

2. GRAYLING GENETICS STUDY (Task 99-11)

Objective: To examine the genetic structure and degree of similarity of grayling populations within the Williston Reservoir watershed. The information will allow for the more effective management of the species within the watershed.

1998/99 (Year 3 of 3): Genetic samples were collected from a number of rivers within the watershed. Initial analysis of the data has found clear genetic markers that can be used to distinguish between stocks above and below the dams. A number of other markers have been found, that may be able to distinguish different stocks within the watershed.

3. BULLRUN AND PORTAGE CREEK DIVERSION (Task 99-12)

Objective: To determine the feasibility of diverting Portage and Bullrun Creeks into Dinosaur Reservoir. The diversion, into a small intermittent stream, would provide at least two kilometres of spawning and rearing habitat and would flow into the reservoir through the Dinosaur Lake Campground.

1989/99 Yr. 2 of 3): Thermographs were installed in the streams to record water temperatures. A topographic site survey was completed and presented to the Technical Committee, along with a preliminary channel design with options, recommendations, potential problems and cost proposals. The estimated costs to excavate the channel were $34,000. Future instream habitat improvements would be dependant upon the flows obtained.

4. TABLE/ANZAC ARCTIC GRAYLING (Task 99-21)

Objective: To gather life history information and habitat requirements on Arctic grayling and determine enhancement opportunities in two physically similar watersheds. These systems will be used to provide long-term baseline information, as recommended in the Arctic grayling Enhancements Review by Dr. T. Northcote. This information will also be used to evaluate enhancement and habitat protection activities.

1998/99 Year 4 of ongoing): A detailed work plan was produced for and approved by the Fish Technical Committee. The 1998 project determined the distribution, relative abundance, hatch timing and early growth rates of newly hatch grayling in the Table and Anzac rivers. A key is being developed with the assistance of Dr. McPhail (UBC)to help identify larval grayling. For the first time significant numbers of one year old grayling were captured. These juveniles were located in the Parsnip River and genetic samples, distribution, relative abundance, growth and habitat utilization data was collected. From the data collected it appears that nearly all one and two year old grayling from the Table and Anzac rivers rear in the Parsnip River. Three index sites in the Table River and five in the Anzac were established to monitor long term population trends. Mark recapture methodologies may not be suitable for estimating grayling populations, in this program, because the marked fish to moved out of the study area. Scale back calculation data was tabulated to allow comparisons of yearly growth rates with temperature, flow and year class data. Additional funding ($112,000) was provided for this project through Forest Renewal B.C.

5. ARCTIC GRAYLING RADIO TRACKING (Task 99-22)

Objective: To locate additional Arctic Grayling spawning areas with the watershed through implantation of radio tags and tracking over 12 months.

1998/99 (Year 3 of ongoing): Radio telemetry work on the Table and Anzac Rivers from previous years has been completed, but no new work was initiated because of funding cutbacks from FRBC.

6. SMALL LAKE (DOONAN) INVENTORY (Task 99-16)

Objective: To conduct a Reconnaissance Level inventory on a small unnamed (Doonan)lake in the Pine River watershed and identify and evaluate enhancement opportunities.

1998/99 (Year 1 of 1): Surveys were conducted on Doonan Lake and a draft report has been completed. This survey suggests that this lake is barren, that it could support a self sustaining trout population, and habitat improvement, projects were identified. This lake is located near Simpson Lake in the Pine River watershed and could provide similar public involvement opportunities(transplants), however road access to this lake may be difficult in the future.

7. DINOSAUR RESERVOIR AQUATIC PLANT TRANSPLANT (Task 99-24)

Objective: To evaluate the potential of establishing aquatic plants in Dinosaur Reservoir. Establishment of aquatic plant communities would provide much needed rearing habitat, as well as provide an improved food source and potentially reduce entrainment for fish species in Dinosaur Reservoir.

1998/99 (Year 1 of 3): This project was not initiated due to time /schedule conflicts with the contractor.

ENHANCEMENT PROJECTS

8. PROJECT MAINTENANCE (Task 99-02)

Objective: To maintain the Dina Creek spawning habitat improvement project.

1998/99 (Year 3 of ongoing): Dina Creek weirs were adjusted and spawning gravel added, with the assistance of local volunteers. Approximately 300 rainbow trout spawners were observed in the stream this year. PWFWCP staff also participated in the annual Dina Creek field day, which was attended by approximately 300 students.

9. STOCKING AND KOKANEE PRODUCTION (Task 99-03)

Objective: To provide funds to cover costs incurred by the Fisheries Branch to rear and release fish in the Williston Watershed.

1998/98 (Year 9 of ongoing): Davis River and Carbon Creek were stocked with 25,000 and 100,000 kokanee respectively. In addition 44,000 rainbow and 50,000 brook trout were released into nine small lakes.

10. GETHING BULL TROUT TRANSPLANT (Task 99-07)

Objective: To transport and monitor adult bull trout into habitat upstream from a series of impassable water falls in order to establish a self perpetuating population above the falls and to provide access to improved spawning and rearing habitat for this species in Dinosaur Reservoir.

1998/99 Year 5 of 5): Only four Bull trout were captured from the base of Gething Creek falls this year, and because of the low numbers the fish were not transplanted above the barrier.

11. SIMPSON LAKE TRANSPLANT (Task 99-08)

Objective: To transplant wild rainbow trout into a previously barren headwater lake in the Pine River system. This lake has spawning and rearing habitat and should provide a wild, self-sustaining population within a few years.

1998/99 (Year 4 of 4): Simpson Lake is located 65 km west of Chetwynd in the Pine Pass and was initially surveyed by PWFWCP staff in 1991. This survey found the lake was barren of fish and that it appeared to have suitable habitat to support a self sustaining population of rainbow trout. Starting in 1994, wild rainbow trout from Williston Reservoir were transplanted into Simpson Lake. The number of rainbow trout transplanted was twenty six in 1994, sixty two in 1996 and seventy three in 1997. In 1998 a total of 133 rainbow trout were transplanted to Simpson Lake with the assistance of the Chetwynd Rod and Gun Club and Wilderness Watch members. This was the final year of transplants and a follow up evaluation will be conducted in 1999 to assess the success of the transplants.

12. DINA LAKE #3 SPAWNING HABITAT CREATION (Task 99-09)

Objective: To create a sufficient amount of suitable spawning habitat to allow for the development of a self sustaining naturalized rainbow trout population.

1998/99 (Year 3 of 4): Dina Lake #3 was initially surveyed by PWFWCP staff in 1992 and was found to be suitable for sportfish introductions. The initial stocking was carried out by local volunteers and an excellent fishery has developed. However, there was no suitable spawning habitat available in the inlet stream. Starting in 1995 local volunteer groups have assisted in creating spawning habitat by, breaching old beaver dams, hauling gravel to the site, altering the stream channel, creating cover, and placing spawning gravel in the stream. In 1998 the Mackenzie Rocky Mountain Riders Snowmobile Club carried 150 (60 lb)bags to the site during the winter and later the Mackenzie Senior Secondary School grade 11 science class assisted in placing the spawning gravel in Dina Creek # 3.

13. CLASSROOM KOKANEE REARING (Task 99-10)

Objective: To assist with a program to raise kokanee in a classroom environment as an educational tool, in Mackenzie and Hudson's Hope schools.

1998/99 (Year 3 of ongoing): This project is being conducted in conjunction with the local School District, Department of Fisheries and Oceans, the Mackenzie Fish and Game Association and Mackenzie Nature Observatory. Donations from local industry and the Nature Observatory helped purchase and repair the required equipment. In 1998 program staff obtained the necessary permits, collected the eggs (50 per school) from Ministry of Environment, delivered the eggs to the schools and helped set up the aquariums. Talks were given to four classes in Mackenzie and two in Hudson's Hope and program staff acted as judges for class art contests and obtained and presented prizes to the winners.

14. CASWELL CREEK HABITAT ENHANCEMENT (Task 99-14)

Objective: To enhance spawning and rearing habitat for rainbow trout in Caswell Creek and to provide enhanced rearing habitat in the Misinchinka River.

1998/99 (Year 1 of 2): This project was not conducted due to staff time constraints and construction permit issues.

15. WILLISTON RESERVOIR HABITAT ENHANCEMENT (Task 99-15)

Objective: To examine the feasibility of creating a number of small log booms and underwater reefs as habitat enhancement structures at the Elizabeth Creek boat launch site.

1998/99 (Year 1 of 4): Photographs, bathymetric maps and netting studies were undertaken at this site to determine the feasibility of installing structures. Baseline data on fish populations was collected so that the effectiveness of future enhancements can be evaluated.

16. FISH SPECIES PAMPHLET AND BOOKLET (Task 99-19)

Objective: To increase angler knowledge and identification of local sport fish species.

1998-99 (Year 1 of 1) This one page, plastic laminated pamphlet consists of colour photographs of local gamefish and points out the identifying features of each species. The pamphlet also provides a brief explanation of the Program and provides sources for additional information.

17. MESILINKA RIVER FERTILIZATION (Task 99-20)

Objective: To determine the effectiveness of low level inorganic fertilization (N and P) as a technique to increase the size at age and standing biomass of rainbow trout, Arctic grayling, bull trout and mountain whitefish in an oligotrophic northern river.

1998/99 (Year 1 of 5): This project, initiated in 1990, has completed eight years of inventory, baseline data gathering, and fertilization with detailed evaluations. The project is now in the first year of a five year maintenance phase, which will consist of continued fertilisation with minimal evaluations. Evaluations will be conducted at two year intervals, starting n 1999, to determine the long term effectiveness of the project. The 1998 project continued the fertiliser application, but without intensive monitoring in order to reduce costs. A complete summary report of the multi year experiment was completed.

MONITORING / EVALUATION PROJECTS

18. CARBON CREEK SIDE CHANNEL (Task 99-04)

Objective: To determine current fish utilization of the side channel, which was created to improve spawning and rearing habitat in this system.

1998/99 Year 7 of): Carbon side channel was constructed to provide high quality spawning habitat for kokanee introduced into this system, as well as spawning and rearing habitat for native species. In 1998 electrofishing surveys conducted in side channel found low use by bull trout. Several large beaver dams blocked the channel by late summer, preventing fish access. Late summer water levels were extremely low, to the extent that sections of the channel were dry. No adult kokanee were observed in the stream in the area of the channel. It was decided that further work on the channel would not be undertaken until kokanee returns to the river have dramatically increased. A short report reviewing the project was produced.

19. SMALL LAKES EVALUATION (Task 99-17)

Objective: To evaluate the effectiveness of previous enhancement (fish introductions) activities.

1998/99 Year 1 of 1): Fisheries evaluations were conducted on Heather, Dina #1, Calais and Little Calais Lakes. The use of the "blackwater" strain of rainbow trout has been ineffective in creating a fishery in Heather Lake. Brook trout are not well established in Dina Lake #1, despite several years of stocking, but the rainbow trout are doing very well. Arctic grayling have not become established in Calais or Little Calais lakes. This suggests that the transplant of adult grayling into these two lakes, which are open systems may not be suitable method to establish new populations of this highly migratory species.

FISH PROGRAM - FINANCIAL SUMMARY

The Fish Program budget for 1998/99 was $526,900, plus $35,000 for Public Consultation. Expenditures during the 1998/99 fiscal year totalled $485,774 (including Public Consultation). Administrative costs were $66,015 (14 %), Planning $92,754 (19 %), Public Consultation $30,193 (6 %), Inventory and Assessment $136,035 (28 %), Enhancements $126,425 (26 %) and Evaluations were $34,332 (7 %) (Figure 1, Table 1). The unspent funds will be carried over to the next fiscal year. In addition $112,000 was received from Forest Renewal B.C. to support the Table/Anzac Arctic grayling studies.

Monies expended within the six cost categories were somewhat different than originally budgeted (Table 1). Administration cost were higher because of additional workloads. Planning was higher because of costs associated with the strategic plan creation and a limnology workshop. Enhancement was lower than anticipated because of cancellation of projects due to time constraints. Inventory costs were higher than expected because outside funding was cutback and so more program dollars were required.

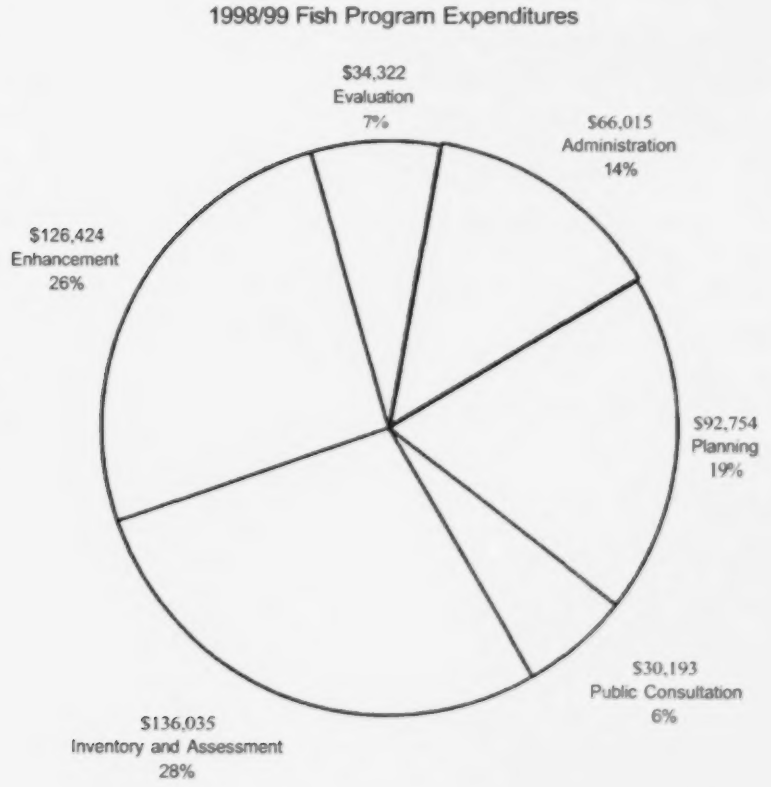


Figure 1. Fish Program expenditures in the 1998/99 fiscal year.

Table 1. Detailed Fish Program budget expenditures for the 1998/99 fiscal.

COST CATEGORY	SPECIFIC PROJECT	PROJECT COSTS	TOTAL EXPENDED	% EXPENDED	% BUDGETED
Administration			66,015	14	10
Planning			92,754	19	15
Public Consultation			30,193	6	8
Inventory/ Assessment	Report Writing, Previous Years	15,219	136,035	28	26
	Grayling Genetics Study	36,090			
	Bullrun Portage Ck Diversion	12,629			
	Table/ Anzac Arctic grayling	59,865			
	Arctic Grayling Radio Tracking	2,005			
	Small Lake Inventory	9,166			
	Dinosaur R. Aquatic Plant Trans	1,062			
Enhancement	Project Maintenance	7,378	126,425	26	34
	Stocking and Kokanee Prod	34,690			
	Gething Bull Trout Transplant	5,618			
	Simpson Lake Transplant	7,750			
	Dina #3 Spawning Habitat Imp	3,940			
	Classroom Kokanee Rearing	5,686			
	Caswell Creek Habitat Enh	702			
	Williston Reservoir Habitat Enh	7,642			
	Species Pamphlet and Booklet	2,038			
	Mesilinka River Fertilization	50,979			
Evaluations	Carbon Creek Side Channel	5,209	34,332	7	7
	Small Lake Evaluation	29,114			
Total			485,744	100	100
Outside Funding	Table / Anzac Arctic grayling	112,000			

WILDLIFE PROGRAM

Mari D. Wood

98/99 PROJECT LIST

	PROJECT	TASK #	LOCATION
PLANNING			
1	Amphibian Working Plan	98-08	Watershed
2	Mtn Goat Forest Habitat Use Working Plan	98-09	Ospika
PUBLIC CONSULTATION			
3	Omineca Mountains Caribou Project Brochure	98-B3	Omineca
4	Williston Watershed Fish and Wildlife Species List	98-B3	Watershed
INVENTORY/ASSESSMENT			
5	Fisher Habitat Use Project	98-01	Omineca
6	Mackenzie Migratory Songbird Monitoring (Co-op Project[1])	98-03	Mackenzie
7	Amphibian Reconnaissance Surveys	98-08	Omineca, Parsnip, Peace
8	Winter River Moose Inventory	98-10	Omineca, Nation, Ospika
9	Winter Waterfowl Inventory	98-11	Watershed
10	Snow Depth Monitoring	98-12	Watershed
11	Nabesche Mtn Goat and Licks	98-13	Peace
12	East Peace Arm Sheep Inventory	98-14	Peace
13	Rainbow Rocks Stone's Sheep	98-15	Peace
14	Western Muskwa Ranges Ungulate Inventory	98-17	Finlay
15	Mt. Selwyn Stone's Sheep Inventory	98-A4	Peace
16	Omineca Caribou Project (Carry-over Project[2])	n/a	Omineca
ENHANCEMENT/PROTECTION			
17	Anzac Moose Enhancement/Diversionary Feeding (Co-op Project[1])	98-04	Parsnip
18	Rocky Marsh Wetland Enhancement	98-05	Parsnip
19	Ingenika Prescribed Burn	98-06	Finlay
20	Peace Arm Five Year Burn Plan	98-16	Peace
EVALUATION/MONITORING			
21	Ingenika River Elk Transplant Monitoring	98-02	Finlay
22	Enhancement Monitoring	98-07	Parsnip
23	Donna Cr Biodiversity Project (Carry-over Project)	n/a	Omineca

[1] "Co-operative Projects" are administered by other agencies. PWFWCP co-operates on these projects by contributing funding and/or technical expertise.

[2] "Carry-over Projects" are those projects deferred from the previous fiscal 97/98

Abbreviations used for Agencies/Clubs:

BCE: B.C. Environment
CWS: Canadian Wildlife Service
DU: Ducks Unlimited
FFI: Finlay Forest Industries
FRBC: Forest Renewal B.C.
HCTF: Habitat Conservation Trust Fund
MNO: Mackenzie Nature Observatory
MOF: Ministry of Forests
PWFWCP: Peace/Williston Fish & Wildlife Compensation Program
SCWA: Spruce City Wildlife Association
SG: Slocan Group (formerly TimberWest)

Agencies/clubs that are partners on PWFWCP projects are listed in brackets [ ] at the end of each project's objective.

PLANNING PROJECTS

1. AMPHIBIAN WORKING PLAN (#98-08)

Objectives: To develop a project to monitor the long-term status of amphibians at selected sites within the watershed. [PWFWCP]

1998/99 (Year 1 of 1): Following spring reconnaissance-level amphibian surveys (see Amphibian Reconnaissance Surveys, project 98-08), a Working Plan for potential future activities was drafted.

2. MTN GOAT FOREST HABITAT USE WORKING PLAN (#98-09)

Objectives: To develop a project to investigate the use of mid and low elevation forested habitats and mineral licks by mountain goats. [PWFWCP]

1998/99 (Year 1 of 1): A first draft of the Working Plan was prepared and submitted to the WTC for review. The Working Plan proposes a 4-year study of goat use of forested habitats and mineral licks in the Ospika River drainage, employing both GPS and VHF radio-collars.

PUBLIC AWARENESS PROJECTS

3. OMINECA MOUNTAINS CARIBOU PROJECT BROCHURE (#98-B3)

Objectives: To design and develop a brochure detailing the PWFWCP's six-year study of woodland caribou in the Chase and Wolverine Caribou Herds, west of the Williston Reservoir. [PWFWCP]

1998/99 (Yr 1 of 1): The Omineca Mountains Caribou Study final project reports (which will form the basis of the brochure content) were scheduled for completion in spring 1999. Creation of the brochure was therefore deferred until the 1999/00 fiscal.

4. WILLISTON WATERSHED FISH AND WILDLIFE SPECIES LIST (#98-B3)

Objectives: To design and develop a pamphlet/booklet listing all the fish and wildlife species found in the Williston Reservoir watershed. [PWFWCP]

1998/99 (Yr 1 of 1): Background data was assembled for all fish and wildlife species present in the watershed including their distribution, abundance, and habitat use. The information was reviewed by local naturalists and fish and wildlife biologists, and the draft booklet was prepared. The booklet is scheduled for completion early in 1999/00.

INVENTORY/ASSESSMENT PROJECTS

5. FISHER HABITAT USE PROJECT (#98-01)

Objective: To obtain an understanding of fisher ecology and population dynamics in the sub-boreal forests that will lead to the design and implementation of future enhancement and protection activities. [PWFWCP, FRBC, BCE, SG, FFI]

1998/99 (Year 4 of 5): Primary project funding was received from FRBC, and a contractor was hired to conduct fieldwork and project reporting. Ten fishers were monitored by air and ground during the year to determine movements and seasonal habitat use. Natal and maternal den sites were also investigated. Live-trapping was conducted in both fall and winter: 4 new fishers were captured. Six fishers were being actively monitored at the end of the year. A report on the 1997/98 activities was prepared by contractor. Continued project funding from FRBC was pursued for the 1999/00 fiscal year.

6. MACKENZIE MIGRATORY BIRD MONITORING (Co-op PROJECT) (#98-03)

Objectives: To determine the population status and trends of neotropical migratory songbird populations in the northern Rocky Mountain Trench, and to identify those species that may be at risk from habitat loss and degradation. This is a long-term initiative of the Canadian Wildlife Service to monitor trends of songbird populations throughout North America, to which the PWFWCP contributes annual funding support. [CWS, MNO, PWFWCP, SG, FFI]

1998/99 (Yr 5 of ongoing): The mist-nets and banding station at Mugaha Marsh were re-established, and a master bander was hired for the fall migration season. Volunteers from the Mackenzie Nature Observatory provided assistance on a full-time basis. Capture and banding took place between 21 July and 20 September, with 4,116 individuals of 75 species banded. This was the highest number of birds banded at the station since its inception, due largely to a high influx of Pine Siskens. Eight new bird species were added to the Mackenzie region's checklist. A trial run at nest searches, productivity monitoring, and habitat assessments was also conducted for contribution to the Breeding Biology Research and Monitoring Database. The PWFWCP provided funding support for this co-operative project.

7. AMPHIBIAN RECONNAISSANCE SURVEYS (#98-09)

Objectives: To collect reconnaissance-level information on species composition, distribution, and relative abundance of amphibians within the Williston Reservoir watershed. [PWFWCP]

1998/99 (Year 1 of 1): Intensive pond searches and evening calling surveys were conducted over a two-week period in spring. Surveys were conducted in all variants of the Sub-Boreal Spruce and Boreal White and Black Spruce biogeoclimatic zones within the Parsnip, Omineca, and Peace drainages. All 4 suspected species were confirmed in the Parsnip and Omineca drainages: long-toed salamander, western toad, wood frog, and spotted frog. The latter 3 species were also found in the Peace drainage, although the long-toed salamander and the striped chorus frog remained

undetected. A status report on the survey results was prepared, and a Working Plan for future monitoring activities was drafted. Planning was initiated for a second year of reconnaissance-level surveys scheduled for the spring of 1999.

8. WINTER RIVER MOOSE INVENTORY (#98-10)

Objectives: To determine population demographics (age/sex ratios) and distribution of moose wintering within the valley bottoms of the Omineca, Ospika, and Nation Rivers. [PWFWCP]

1998/99 (Year 1 of 1): Aerial surveys of the Omineca, Nation, and Ospika River valley bottoms were conducted in late February. The broad floodplain of the Omineca River revealed the highest numbers, with 500 moose observed. Fewer moose were sighted along the Nation (65) and Ospika (15) Rivers. A status report on the surveys will be prepared in the 1999/00 fiscal.

9. WINTER WATERFOWL INVENTORY (#98-11)

Objectives: To determine the distribution, species composition and abundance of winter waterfowl communities in the Parsnip and Peace drainages, and to identify and map critical open-water sites available to wintering waterfowl. [PWFWCP]

1998/99 (Year 1 of 1): Due to the unseasonably warm winter (which resulted in many areas that typically freeze over remaining ice-free), this survey was deferred to the 1999/00 fiscal. Identification of critical open-water areas is contingent upon an extended period of very cold temperatures.

10. SNOW DEPTH MONITORING (#98-12)

Objectives: To monitor snow depth trends at representative sites within the Williston Reservoir watershed that will aid in the identification of important ungulate winter ranges. [PWFWCP]

1998/99 (Year 1 of ongoing): Remote weather stations with dataloggers were purchased and erected at 6 sites throughout the watershed to monitor snow levels: Squawfish Lake, Manson River, Ingenika River, Ospika River (low elevation), Ospika River (high elevation), and Rainbow Rocks. Data from the winter of 98/99 will be retrieved and downloaded in the summer of 1999.

11. NABESCHE MTN GOAT AND LICKS (#98-13)

Objectives: To improve the distribution of mineral licks on the summer range of mountain goats in the Nabesche River drainage. [PWFWCP]

1998/99 (Year 1 of 3): An inventory of mountain goats and Stone's sheep in the Nabesche drainage was conducted in July. All alpine terrain between Bernard and Schooler Creeks, and from the Williston Reservoir north to the Emerslund Lakes, was surveyed. Sixty-two goats were located on the survey: 50 on Mt. Brewster and 12 further to the northwest. Ranges to the north and east of

Mt. Brewster revealed 46 Stone's sheep. No goats or sheep were observed in the western portions of the survey area. The establishment of artificial mineral licks (through placement of salt blocks) was deferred pending discussion of survey results by the WTC. A decision was later made to establish the artificial licks in the spring/summer of 1999.

12. EAST PEACE ARM SHEEP INVENTORY (#98-14)

Objectives: To determine the numbers, population composition (age/sex ratios), and distribution of Stone's sheep wintering north of the Peace Arm of the Williston Reservoir. [PWFWCP]

'998/99 (Year 1 of 1): This population inventory is reliant on the presence of radio-collared sheep to correct for sightability bias during the survey. However, the capture and radio-collaring of sheep north of the Peace Arm (see Rainbow Rocks Stone's Sheep, project 98-15) was only partially completed due to weather and other logistical constraints. The population inventory was therefore deferred to 1999/00, and will be conducted following the capture and collaring of additional sheep in March 2000.

13. RAINBOW ROCKS STONE'S SHEEP (#98-15)

Objectives: To define a believed chronic winter tick problem in Stone's sheep wintering at low elevation on Rainbow Rocks on the north side of the Peace Arm. [PWFWCP]

1998/99 (Year 1 of 3): Six Stone's sheep were captured from low elevation Rainbow Rocks, and complete health examinations were performed. Four of the 6 animals had moderate numbers of winter ticks and associated hair loss. Three females were radio-collared for subsequent monitoring of movements and habitat use. Capture and collaring of at least 2 additional sheep from Rainbow Rocks, and 5 sheep wintering on high elevation alpine slopes (for comparative purposes), was deferred to 1999/00 due to weather and other logistical constraints.

14. WESTERN MUSKWA RANGES UNGULATE INVENTORY (#98-17)

Objectives: To determine presence/absence, population size, distribution, and population composition (age/sex ratios) of ungulates (woodland caribou, mountain goats, Stone's sheep) wintering on high elevation ranges east of the Finlay River, between Pesika Creek and the northern boundary of the Williston Reservoir watershed. [PWFWCP]

1998/99 (Year 1 of 1): Due to the reported absence of woodland caribou in the open alpine habitats east of the Finlay River this year, the survey was deferred to the 1999/00 fiscal. Caribou remained in low elevation pine forests throughout the winter, where enumeration is impractical.

15. MT. SELWYN STONE'S SHEEP INVENTORY (#98-A4)

Objectives: To determine presence/absence, population size, distribution, and population composition (age/sex ratios) of Stone's sheep wintering on Mt. Selwyn and Mt. Crysdale south of the Peace Arm of the Williston Reservoir. [PWFWCP]

1998/99 (Year 1 of 1): This survey was to be conducted in conjunction with the East Peace Arm Sheep Inventory (project 98-14) which was deferred to the 1999/00 fiscal. The survey will be attempted again in 99/00.

16. OMINECA MOUNTAINS CARIBOU PROJECT (Carried-over from 97/98)

Objectives: To determine seasonal habitat use and movements of woodland caribou on the west side of the Williston Reservoir, and to protect caribou and caribou habitat through 1) input to BCE caribou management strategies, 2) input to the Mackenzie LRMP table, and 3) input to the Protected Areas initiative. [PWFWCP]

1998/99 (Year 7 of 7): A contract for the completion of both Phase 1 and Phase 2 reports was awarded, and draft reports were prepared. Technical input was provided on the Caribou Management Strategy developed for the Mackenzie LRMP. An inventory of caribou wintering on alpine ranges in the Wolverine Caribou Herd was conducted in February; 91 caribou were observed on the survey. The count was much lower than previous surveys, likely due to the high number of caribou that remained in low elevation forests during the winter.

ENHANCEMENT PROJECTS

17. ANZAC MOOSE ENHANCEMENT (Co-op PROJECT) (#98-04)

Objective: To enhance moose populations in the Parsnip River drainage by diverting predation by black and grizzly bears away from new-born moose calves. [BCE, HCTF, SCWA, PWFWCP]

1998/99 (Yr 5 of 5): In spring, bait stations comprised of road-killed ungulates were established to reduce the likelihood that black and grizzly bears would kill newborn moose calves. The age/sex composition of the population, and of monitored radio-collared cow moose, were used to determine calf survival. The number of calves per 100 females was unchanged until 1998 when it appeared that survival increased dramatically. However, moose calf survival also increased in the adjacent moose population where no bait was put out, suggesting that the increase in calf survival was not a result of the baiting. The PWFWCP provided funding for this co-operative project.

18. ROCKY MARSH WETLAND ENHANCEMENT (#98-05)

Objectives: To conserve and enhance the Rocky Marsh wetlands area near Mackenzie for waterfowl, aquatic furbearers, and other wildlife species that rely on wetland habitats, by providing secure water levels and increasing waterfowl breeding and rearing habitat. [PWFWCP, DU, numerous Mackenzie community groups]

1998/99 (Yr 3 of 3): Additional project funding requested from HCTF was denied; project was postponed subject to further project discussions and investigation of other funding sources.

19. INGENIKA PRESCRIBED BURN (#98-06)

Objectives: To enhance forage for ungulates and bears, and to provide foraging and breeding habitat for many wildlife species that require early successional stages. [PWFWCP, HCTF, BCE, MoF]

1998/99 (ongoing): Pre-burn planning meetings were held with MoF and BCE, and site inspection and fire-guarding activities were conducted. The burn was postponed again for the third consecutive year due to unfavourable burning conditions. A proposal was re-submitted to HCTF for supportive funding in the 1999/00 fiscal.

20. PEACE ARM FIVE YEAR BURN PLAN (#98-16)

Objectives: To develop a 5-year prescribed burn plan for the Dawson Creek Forest District portion of the Peace Arm, that will enhance forage for ungulates and bears, and provide foraging and breeding habitat for many wildlife species that require early successional stages. [PWFWCP]

1998/99 (Year 1 of 1): Re-evaluation of the 5-year burn plan concept resulted in a change in project direction to focus on the development of individual prescribed burn site plans. Due to fieldwork timing constraints, field assessments and development of site plans were deferred to the 1999/00 fiscal.

MONITORING/EVALUATION PROJECTS

21. INGENIKA RIVER ELK TRANSPLANT MONITORING (#98-02)

Objective: To supplement the small existing herd of Rocky Mountain elk in the Ingenika River drainage through the transplant of 50 elk in February 1996, and establish a viable population of elk in the area. [PWFWCP]

1998/99 (Yr 4 of 5): Monitoring of the radio-collared female elk was postponed until May 1999, to be conducted in conjunction with the Ingenika prescribed burn.

22. ENHANCEMENT MONITORING (#98-07)

Objectives: To monitor waterfowl use of previously conducted enhancements (nesting islands, nestboxes), to ensure enhancements are properly maintained and replace/install additional structures where necessary, and to monitor the vegetation response and wildlife use of ungulate forage enhancement areas treated by manual thinning and girdling. [PWFWCP]

1998/99 (ongoing): Wetland enhancements were maintained and assessed for wildlife use. Two nesting islands were installed at Rocky Marsh, and an island in the Tutu Bay area was replaced. A loafing platform was installed in Neilson Lake. Aspen girdling and willow slashing sites at Tutu/Mugaha were assessed, as were manual slashing sites along the Omineca River. To date, the responses of aspen and willow to the treatments has been poor. Reports on the assessments of wetland and forage enhancements will be produced in 99/00.

23. DONNA CREEK FORESTRY/BIODIVERSITY (Carried-over from 97/98)

Objective: To develop and test alternative forest harvesting techniques designed to benefit cavity-dependent birds and mammals. [PWFWCP, HCTF, SG]

1998/99 (Yr 7 of 7): The final report on breeding bird surveys conducted in 1996/97 was reviewed. Completion of the final breeding bird surveys report and a final project summary report were deferred to 1999/00.

WILDLIFE PROGRAM - FINANCIAL SUMMARY

The annual Wildlife Program budget in 1998/99 was $500,000, plus $31,300 in carry-over funds from the previous 1997/98 fiscal. An additional $35,000 was budgeted for Public Consultation activities, resulting in a total fiscal budget of $561,300. Expenditures in the 1998/99 fiscal year amounted to $427,572 of which 68% ($290,252) was used to conduct wildlife research, enhancement, and evaluation projects, while 32% ($137,320) covered administrative, planning and public consultation costs (Figure 2, Table 2). Administrative costs were higher than budgeted due to staff time incurred on performance planning, administrative procedures, and safety and administrative training courses. The deferral of some projects to the 1999/00 fiscal resulted in lower costs than budgeted for research and enhancement.

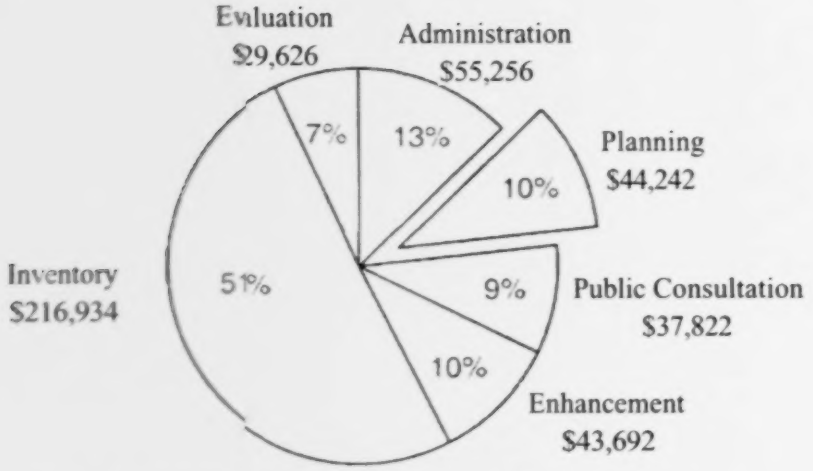


Figure 2. Wildlife Program expenditures in the 1998/99 fiscal

Table 2. Detailed Wildlife Program budget expenditures for the 1998/99 fiscal.

COST CATEGORY	TASK #	SPECIFIC PROJECT	PROJECT COSTS[1]	TOTAL EXPENDED	% Expended	% Budgeted
Administration[2]	98-B1		$55,256	$55,256	13%	7%
Planning[3]	98-B2	Base Costs	$27,236			
	98-08	Amphibian Surveys Work Plan	$6,692			
	98-09	Mtn Goat Forest Use Work Plan	$10,314	$44,242	10%	7%
Public Consultation	98-B3	Base Costs[4]	$33,196			
	98-B3	Omineca Caribou Brochure	$76			
	98-B3	Fish and Wildlife Species List	$4,550	$37,822	9%	5%
Inventory/ Assessment	98-01	Fisher Habitat Use Project	$32,089			
	98-03	Mackenzie Migratory Bird (Co-op)	$5,131			
	98-08	Amphibian Recon Surveys	$18,778			
	98-10	Winter River Moose Inventory	$15,363			
	98-11	Winter Waterfowl Inventory	$619			
	08-12	Snow Depth Monitoring	$48358			
	98-13	Nabesche Mtn Goat and Licks	$20,112			
	98-14	East Peace Arm Sheep Inventory	$196			
	98-15	Rainbow Rocks Stone's Sheep	$23,786			
	98-17	Muskwa Ranges Ungulate Inventory	$142			
	n/a	Omineca Caribou Project (carry-over[5])	$25,375			
	n/a	Other[6]	$26,988	$216,934	51%	56%
Enhancement/ Protection	98-05	Rocky Marsh Wetlands Enhancement	$1,384			
	98-04	Co-op: Anzac Moose Enhance	$22,863			
	98-06	Ingenika Prescribed Burn	$8,779			
	98-16	Peace 5 Year Burn Plan	383			
	n/a	Other[6]	$10,283	$43,692	10%	19%
Evaluation/ Monitoring	98-02	Ingenika Elk Transplant Monitoring	$1,411			
	98-07	Enhancement Monitoring	$18,653			
	n/a	Donna Cr. Biodiversity (carry-over[5])	$4,463			
	n/a	Other[6]	$5,099	$29,626	7%	6%
TOTAL				$427,572	100%	100%

[1] Project Costs: includes operational costs, staff wages and travel, vehicle costs.
[2] Administration: includes staff wages, office rent, BCE administrative support, office supplies, vehicle costs.
[3] Planning: includes staff wages & travel, Technical Committee travel, vehicle costs.
[4] Base Costs - Public Consultation: includes staff wages & travel, vehicle costs, news supplement, website.
[5] Carry-over: projects carried-over from the previous 97/98 fiscal year.
[6] Other: includes major equipment purchases, previous project reports, input to protection/management activities.